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(पहला पुनरीक्षण)

Indian Standard

OIL OF EUCALYPTUS CITRIODORA — SPECIFICATION

(*First Revision*)

UDC 665·526·78

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 1993

Price Group 2

Natural & Synthetic Perfumery Materials Sectional Committee, PCD 18

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Natural & Synthetic Perfumery Materials Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

The oil of *Eucalyptus citriodora* is obtained by steam distillation of the leaves and terminal branchlets of *Eucalyptus citriodora* Hook. It is used as a source of manufacture of citronellal.

This standard was first published in 1979. In this revision the requirements of the standard are being updated keeping in line with the current quality of the material available. GC method of analysis has been incorporated in this revision for the purpose of guidance only under Annex A.

In the preparation of this standard considerable assistance has been derived from the following publications:

ISO 3044 : 1974 Oil of *Eucalyptus citriodora.* International Organization for Standardization.

BS 2999/23 : 1972 Oil of *Eucalyptus citriodora.* British Standards Institution.

EOA 130 Standard for *Eucalyptus citriodora.* Essential Oil Association of USA. 1970. New York.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

OIL OF EUCALYPTUS CITRIODORA — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and tests for oil of *Eucalyptus citriodora.*

2 REFERENCES

The following Indian Standards are necesssary adjuncts to this Standard:

IS No.	*Title*
326	Methods of sampling and test for natural and synthetic perfumery materials
(Part 1) : 1984	Sampling (*second revision*)
(Part 2) : 1980	Preliminary examination of perfumery materials and samples (*second revision*)
(Part 3) : 1980	Determination of relative density (*second revision*)
(Part 4) : 1980	Determination of optical rotation (*second revision*)
(Part 5) : 1986	Determination of refractive index (*second revision*)
(Part 6) : 1986	Determination of solubility (*second revision*)
(Part 11) : 1986	Determination of carbonyl value and content of carbonyl compounds (*second revison*)
1070 : 1992	Water, reagent grade (*third revision*)
2284 : 1988	Method for olfactory assessment of natural and synthetic perfumery materials (*first revision*)
6597 : 1988	Glossary of terms relating to natural and synthetic perfumery materials (*first revision*)

The above mentioned standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated above.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 6597 : 1988 shall apply.

4 REQUIREMENTS

4.1 Description

Oil of *Eucalyptus citriodora* shall be clear and colourless to pale yellow or greenish yellow liquid, free from sediment, suspended matter and adulterants when tested as per IS 326 (Part 2) : 1980.

4.2 Solubility

The material shall be soluble in two volumes of ethyl alcohol (80 percent by volume) when tested as prescribed in IS 326 (Part 6) : 1986.

4.3 The material shall also comply with the requirements of Table 1.

Table 1 Requirement for Oil of *Eucalyptus citriodora*

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Odour	Characteristic grassy lemon-like	2284 : 1988
ii)	Relative density at 27°/27°C	0·850 0 — 0·870 0	326 (Part 3) : 1980
iii)	Refractive index at 27°/27°C	1·447 0 — 1·457 0	326 (Part 5) : 1986
iv)	Optical rotation	— 2° to + 6°	326 (Part 4) : 1880
v)	Carbonyl compounds*, calculated as citronellal ($C_{10}H_{18}O$), percent by mass, *Min*	70	326 (Part 11) : 1986

*Low values may be obtained for this isolate if the usual hydroxylamine hydrochloride technique is used. Fairly satisfactory results may be obtained, if the solution is well cooled and the titration carried out at low temperature (— 10°C).

5 PACKING AND MARKING

5.1 Packing

The material shall be supplied in air-tight well-closed containers permitting a minimum of air space, as agreed to between the purchaser and the supplier.

The material shall be well-protected from light and stored in a cool place.

5.2 Marking

The material shall be marked with the following information:

a) Name of the material,

b) Indication of the source of manufacture,

c) Net mass of material, and

d) Batch number.

6 SAMPLING

Representative samples of the material shall be drawn as prescribed in IS 326 (Part 1) : 1984.

7 TESTS

Tests shall be conducted as prescribed in **4.1**, **4.2** and col 4 of Table 1.

7.1 Quality of Reagents

Unless otherwise specified, pure chemicals and distilled water (*see* IS 1070 : 1992) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Foreword*)

GAS CHROMATOGRAPHIC ANALYSIS OF OIL OF EUCALYPTUS CITRIODORA

A-0 GENERAL

The chromatographic conditions given here are for guidance only.

A-0.1 Outline of the Method

A sample of the material is dissolved in a suitable solvent (for example, hexane, cyclohexane or petroleum ether) and is injected into the gas chromatograph where it is carried by the carrier gas from one end of the column to the other. During its movement, the constituents of the sample undergo distribution at different rates and ultimately get separated from one another. The separated constituents emerge from the detector end of the column one after another and are detected by suitable means whose response is related to the amount of a specific component leaving the column. The detector signals, on transmission to the recorder, plots the chart. From the specific area under various peaks corresponding to specific constituents, the quantities of different constituents are determined.

A-1 APPARATUS

Any suitable gas chromatograph and column capable of being operated under conditions suitable for resolving the individual constituents into distinct peaks may be used. The typical chromatogram for oil of *Eucalyptus citriodora* with the following chromatographic conditions is shown in Fig. 1.

Sample	**Oil of** ***Eucalyptus citriodora***
Column	
Material	Stainless steel
Length	1·82 m
Orifice	0·63 cm
Stationery phase and solid support	SE-30 Chromosorb WHP, 100-120 Mesh
Carrier Gas	**Nitrogen**
Conditions	
Column temperature	170°C
Injection port temperature	250°C
Detector	
Type	F.I.D.
Temperature	250°C

A-2 CALCULATION

A-2.1 Calculate the concentration of individual constituents from the areas of specific constituents shown on the chromatogram of the material on the basis of peak areas on chromatogram obtained with known amount of pure constituents using the same apparatus under identical conditions.

A-2.2 Area Measurement (*see* Note)

Since normal peaks approximate a triangle, the area is measured by multiplying the peak height

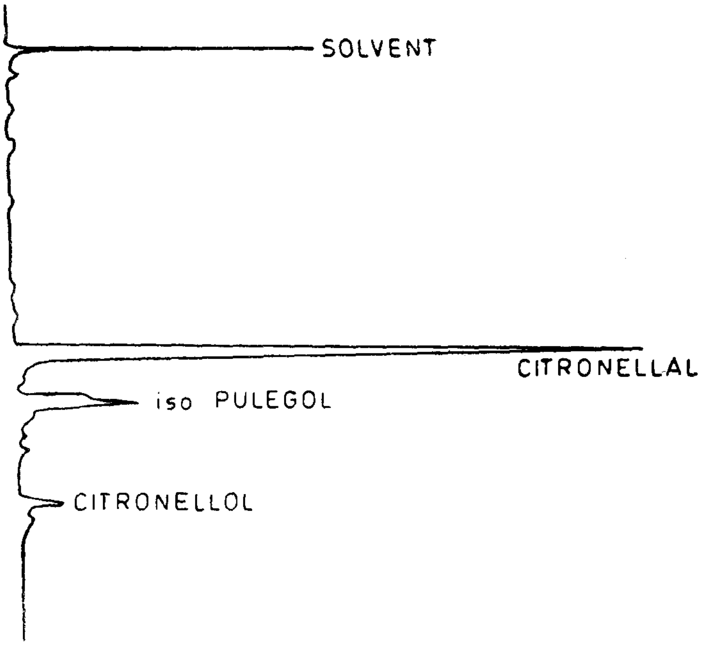

FIG. 1 A TYPICAL CHROMATOGRAM FOR OIL OF EUCALYPTUS CITRIODORA

times the width of half height. The normal peak base is not taken since large deviations may be observed due to tailing or adsorption. This technique is rapid, simple and fairly accurate when peaks are symmetrical and of reasonable width.

A-2.3 Area Normalization

By normalizing, it is meant, calculating the percentage composition by measuring the area of each and dividing the individual areas by total area, for example:

$$\text{Percentage of } A = \frac{\text{Area of } A}{\text{Total area}} \times 100$$

NOTE — Other methods of area measurements, namely, triangulation, disc integrator and electronic digital inetgrator if fixed with GC machine, would be of great advantage.

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[*Page* 1, *Table* 1, *Sl No.* (iii), *col* 3] — Substitute '1.446 9-1.458 9' *for* '1.447 0-1.457 0'.

(PCD 18)

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